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2002 MICHIGAN SMALL GAME HARVEST SURVEY

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ABSTRACT

Small game license buyers were contacted after the 2002 hunting seasons to estimate the number of people hunting upland game and waterfowl, their days afield, and harvest. The survey also was used to check whether migratory bird hunters registered with the Harvest Information Program (HIP) and to determine hunters' opinions about extending the late pheasant season in southern Michigan. In 2002, about 213,000 people hunted upland game species, while 59,000 people hunted waterfowl. Upland game hunters most often sought rabbits, grouse, and squirrels. The number of people hunting small game (upland game and waterfowl combined) declined about 7% since 2001 and about 65% since the mid-1950s. At least 71% of the people hunting migratory birds (waterfowl and woodcock) registered with HIP in 2002. About 49% of the upland game hunters favored an extension to the late pheasant season in southern Michigan, while 25% of the hunters disapproved.

INTRODUCTION

The Michigan Department of Natural Resources (DNR) has the authority and responsibility to protect and manage the wildlife resources of the State of Michigan. This responsibility is shared with the U.S. Fish and Wildlife Service (USFWS) for the management of migratory species such as ducks (Anatinae), geese (*Branta* and *Anser* spp.), and woodcock (*Scolopax minor*). Harvest surveys are one of the management tools used by the Wildlife Division to accomplish its statutory responsibility. Estimating harvest and hunting effort are among the primary objectives of these surveys. Estimates derived from harvest surveys, as well as breeding bird counts and population modeling, are used to monitor game populations and establish harvest regulations.

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Since the 1950s, the primary upland small game species harvested in Michigan have been ring-necked pheasant (*Phasianus colchicus*), ruffed grouse (*Bonasa umbellus*), American woodcock, cottontail rabbit (*Sylvilagus floridanus*), snowshoe hare (*Lepus americanus*), tree squirrels (*Sciurus* spp. and *Tamiasciurus hudsonicus*), and American crow (*Corvus brachyrhynchos*) (Frawley 2002). Most of these animals could be harvested during fall and early winter (Table 1) by a person possessing a small game hunting license (includes resident, nonresident, 3-day nonresident, resident junior, and senior small game hunting licenses). Woodcock hunters also were required to register with the National Migratory Bird Harvest Information Program (HIP) since 1995.

People purchasing a small game license could also hunt ducks and geese if they obtained a waterfowl hunting license, federal waterfowl stamp, and registered with HIP. Landowners and their families that hunted upland game and waterfowl on their property could hunt without a hunting license, although they still needed to obtain a federal waterfowl stamp if they hunted waterfowl and register with HIP if they hunted migratory species.

The Harvest Information Program is a cooperative effort between state wildlife agencies and the U.S. Fish and Wildlife Service. It was implemented to improve knowledge about harvest of migratory game birds (e.g., ducks, geese, and woodcock). Beginning in 1995, any person who hunted migratory game birds in Michigan was required to register with HIP and answer several questions about their hunting experience during the previous year. HIP provided the USFWS with a national registry of migratory bird hunters from which they can select participants for harvest surveys.

Estimating harvest, hunter numbers, and hunting effort were the primary objectives of small game harvest surveys. These surveys also provided an opportunity to collect information about management issues. Some pheasant hunters proposed extending the pheasant hunting season in Michigan so it was similar to seasons in other midwestern states. Extending the season would have no known biological consequences, but it was unknown whether most hunters would support an extended season. A question was added to the questionnaire to determine whether hunters would support an extension of the late pheasant season in the southern Lower Peninsula. In addition, the rate of compliance with HIP registration was determined for migratory bird hunters.

METHODS

Following the 2002 hunting seasons, a questionnaire was sent to 16,282 randomly selected people that had purchased a small game hunting license. All licensees had an equal chance of being included in the random sample. After the sample was selected, licensees were grouped into 1 of 10 strata on the basis of their residence. Residents of the Upper Peninsula (UP), northern Lower Peninsula (NLP), southern Lower Peninsula (SLP), and nonresidents were grouped into separate stratum (Figure 1). Furthermore, hunters were divided into groups on the basis of whether they had purchased a waterfowl hunting license. Up to two follow-up questionnaires were sent to non-respondents. Questionnaires were undeliverable to 355 people, primarily because of changes in residence. Questionnaires were returned by 10,418 of 15,927 people receiving the questionnaire (65% response rate).

Estimates were calculated using a stratified random sampling design (Cochran 1977). Using stratification, hunters were placed into similar groups (stratum), and then estimates were derived for each group. The statewide estimate was then derived by combining group estimates so that the influence of each group matched the frequency that its members occurred in the population of hunters. The primary reason for using a stratified sampling design was to produce more precise estimates. Improved precision means that similar estimates should be obtained if this survey was repeated.

Estimates were calculated along with their 95% confidence limit (CL). This confidence limit can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval was a measure of the precision associated with the estimate and implies that the true value would be within this interval 95 times out of 100. Harvest estimates did not include animals taken legally outside the open season (e.g., nuisance animals) and by unlicensed landowners and their family that hunted on their own land. Estimates were based on information collected from random samples of hunting license buyers. Thus, these estimates were subject to sampling errors (Cochran 1977). Estimates were not adjusted for possible response or nonresponse bias.

RESULTS AND DISCUSSION

License sales and hunter participation

In 2002, 328,048 people purchased small game or waterfowl hunting licenses (Table 2). About 72% (±1%) of the licensees actually hunted (Table 3). An estimated 213,406 people hunted upland game species in 2002, while 58,944 people pursued waterfowl (Table 3). About 98% of the upland game hunters were males, and 98% of the waterfowl hunters were males (Table 4). Hunters most often sought grouse, rabbits, and squirrels (Tables 5-7).

In 2002, the average age of small game license buyers was 40 years (Figure 2). Nearly 10% (35,997) of the license buyers were younger than 17 years old. The average age of the licensees that purchased a waterfowl hunting license was 40 years. About 2% (999) of the waterfowl license buyers were younger than 17 years old.

Harvest and hunting trends

The number of people hunting small game (upland game and waterfowl combined) declined by about 7% since 2001 (Table 3) and has declined 65% since the mid-1950s (Figure 3). This trend has been previously reported in Michigan and nationally (Enck et al. 2000, Frawley 2001). Hawn (1979) speculated that declining ring-necked pheasant populations was the primary reason for declining small game hunter numbers in Michigan. The number of people hunting pheasants has declined by nearly 90% between the mid-1950s and recent years (Figure 4).

Declining participation has also been noted among hunters pursuing cottontail rabbits (-75%), snowshoe hare (-70%), squirrels (-60%), and ducks (-60%) since the mid-1950s. Only the

number of people hunting geese has been relatively stable since the mid-1950s. Changes in hunter participation and harvest were generally similar, except for ducks (Figure 4). Despite fewer hunters pursuing ducks, duck harvest in 2002 was near the average number taken annually since the 1950s.

Harvest of game species and hunter participation usually track changes in game populations. The number of hunters that pursued pheasants, rabbits, snowshoe hares, and squirrel was near record low levels during recent years (Figure 4). Population surveys have indicated that pheasant, quail, and woodcock populations are currently among their lowest recorded levels since the 1960s (Kelley 2003, Tuovila et al. 2002). The abundance of rabbit, hare, and squirrels was not monitored annually; thus, it was not possible to determine whether harvest and population trends were similar. Michigan's grouse population generally follows a cyclic pattern that lasts about 10 years, and currently, the grouse population appears to be near the lows in the cycle (Tuovila et al. 2003). Hunter numbers and the number of grouse harvested have followed a similar cyclic pattern.

Although many small game species are not as abundant today as during previous decades (e.g., pheasant, quail, woodcock), the mean number of animals taken per hunting effort has not paralleled changes in the population (Figure 5). Thus, many hunters have maintained their hunting efficiency despite declining numbers of pheasant, quail, and woodcock.

Goose harvest and the mean number of geese taken per hunting effort have increased gradually since the 1970s (Figure 5). In contrast, the number of duck hunters and duck harvest has decreased since 1970 (Figure 4); however, duck harvest per effort has increased (Figure 5).

Michigan's goose harvest consisted of nearly all Canada geese (*Branta canadensis*) (Martin and Padding 2002). During recent years, about 70% of the goose harvest was considered resident Canada geese (Soulliere and Luukkonen 2003). Numbers of resident geese have stabilized but were still near record highs in 2002 (Soulliere and Luukkonen 2003). The number of geese harvested in 2002 was similar to harvest totals during recent years and parallels the changes in the resident goose population.

Hunter harvest and participation during the experimental early goose hunting season

Beginning in 2000, an experimental early goose season was conducted during September 1-10 in Saginaw, Tuscola, and Huron counties of the Saginaw Bay region. This three-county area had been closed to early goose hunting since 1987, and the current experimental season was scheduled to last three years. At least 2,100 hunters have hunted geese each year during the experimental season in the three-county area (Table 8), and these hunters have harvested between 5,500 and 6,300 Canada geese each year.

HIP compliance

In 2002, an estimated 71% of the hunters that hunted migratory birds (waterfowl and woodcock) had registered with HIP. This was the highest level of compliance noted since 1997 (Table 9). This increased compliance probably occurred because the DNR provided an additional self-reporting procedure to register for HIP via its web site in 2002. Moreover, the DNR promoted HIP in its hunting guide and issued news releases informing licensees that the U.S. Fish and Wildlife Service planned stricter enforcement of the HIP requirement in 2002.

Hunters that had registered with HIP were responsible for an estimated 75% of the geese harvested, 80% of the ducks harvested, and 70% of the woodcock taken in 2002 (Table 10). Similarly, registered hunters were responsible for 75% of the days spent afield pursuing geese, 80% of the duck hunting efforts, and 65% of the woodcock hunting trips.

Hunter opinions

Upland game hunters were asked to indicate whether they would support extending the late pheasant hunting season until January 1 in the Lower Peninsula where the season currently is open until December 15. About 49% (±1%) of the hunters strongly approved or approved of this extension. About 25% (±2%) of the hunters disapproved or strongly disapproved of the proposed change. About 22% (±1%) of the hunters indicated that they were not sure, and 4% (±1%) of the hunters failed to provide an answer.

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Table 1. Upland game and waterfowl hunting seasons in Michigan for 2002.

Species, season, and area[a]	Season dates
Pheasant	
Upper Peninsula	Oct. 10 – 31
Lower Peninsula	Oct. 20 – Nov. 14 and Dec. 1 - 15
Northern bobwhite[b]	
Southern Lower Peninsula	Oct. 20 – Nov. 11
Ruffed grouse	
Upper Peninsula	Sept. 15 – Nov. 14
Lower Peninsula	Sept. 15 – Nov. 14 and Dec. 1 – Jan. 1
Woodcock	
Statewide	Sept. 21 – Nov. 4
Cottontail rabbit	
Statewide	Sept. 15 – March 31
Snowshoe hare	
Statewide	Sept. 15 – March 31
Squirrels	
Statewide	Sept. 15 – Jan. 1
Crow	
Upper Peninsula	Aug. 1 – Sept. 30
Lower Peninsula	Aug. 1 – Sept. 30 and Feb. 1 – March 31
Ducks[b]	
Upper Peninsula	Sept. 28 – Nov. 24 and Nov. 30 – Dec. 1
Lower Peninsula	Oct. 12 – Dec. 8 and Jan. 4 – Jan. 5
Canada geese[c,d]	
Early seasons	
Upper Peninsula and Thumb area (LP)	Sept. 1 – 10
Lower Peninsula	Sept. 1 – 15
Regular seasons	
Southern James Bay Population (SJBP) Management Area	Sept. 16 – Oct. 6 and Dec. 14 – 22
Mississippi Valley Population(MVP) Management Area	Sept. 16 – Oct. 6
Late seasons	
Southern Lower Peninsula	Jan. 4 – Feb. 2

[a]See Figure 1 for boundaries of hunt areas.
[b]Colinus virginianus.
[c]Ducks and geese could also be taken during a special 2-day Youth Season (September 21-22).
[d]Special goose hunting seasons also occurred on Goose Management Units, but these seasons affected a relatively small area.

Table 2. Number of small game and waterfowl hunting licenses sold, 1998-2002.

Item	Year					2001-2002 % Change
	1998	1999	2000	2001	2002	
Number of licenses sold[a]						
Small game	362,678	368,777	358,727	352,059	331,381	-6%
Waterfowl	70,207	69,187	66,583	66,472	65,050	-2%
Combined	432,885	437,964	425,310	418,531	396,431	-5%
Number of people buying a hunting license[b]						
Small game	358,979	364,451	354,906	347,429	327,279	-6%
Waterfowl	69,712	68,693	66,115	65,966	64,582	-2%
Combined	360,402	365,655	355,842	348,273	328,048	-6%

[a]The number of licenses sold is higher than the number of people buying licenses because some people purchased multiple licenses.
[b]Hunters purchasing a small game hunting license could harvest American crow, American woodcock, cottontail rabbit, northern bobwhite, ring-necked pheasant, ruffed grouse, snowshoe hare, and tree squirrels.
[c]Hunters purchasing both small game and waterfowl hunting licenses could harvest all the animals that could be taken with the small game hunting license plus ducks and geese.
[b]A person was counted only once, regardless of how many licenses they purchased.

Table 3. Estimated number of people that hunted upland game and waterfowl in Michigan, 1998-2002.

Hunters	1998	1999	2000	2001	2002		2001-2002 % Change
					No.	95% CL	
Upland game[a]	256,879	250,710	242,458	232,054	213,406	3,570	-8%
Waterfowl[b]	69,175	63,911	60,767	63,966	58,944	1,562	-8%
Combined[c]	276,540	273,125	263,649	254,687	236,695	3,454	-7%

[a]Includes American crow, American woodcock, cottontail rabbit, northern bobwhite, ring-necked pheasant, ruffed grouse, snowshoe hare, and tree squirrels.
[b]Includes ducks and geese.
[c]A person was counted only once, although they may have hunted both upland game and waterfowl.

Table 4. Estimated sex and age of upland game and waterfowl hunters in Michigan, 1998-2002.[a]

					2002	
Hunters	1998	1999	2000	2001	Estimate	95% CL
Upland game[b]						
Males (%)	97.5%	97.0%	97.0%	96.8%	97.5%	0.5%
Females (%)	2.4%	2.9%	3.0%	3.2%	2.5%	0.5%
Age (Years)	40.2	40.7	40.3	40.6	40.3	0.5
Waterfowl[c]						
Males (%)	98.2%	98.0%	97.8%	98.0%	97.8%	1.0%
Females (%)	1.8%	2.0%	2.2%	2.0%	2.2%	1.0%
Age (Years)	38.8	38.5	38.5	38.3	38.2	0.7
Combined						
Males (%)	97.5%	97.1%	97.0%	96.9%	97.4%	0.5%
Females (%)	2.5%	2.9%	3.0%	3.1%	2.6%	0.5%
Age (Years)	40.2	40.8	40.4	40.6	40.2	0.4

[a]Analyses included only those people that hunted.
[b]People that hunted American crow, American woodcock, cottontail rabbit, northern bobwhite, ring-necked pheasant, ruffed grouse, snowshoe hare, or tree squirrels.
[c]People that hunted ducks or geese.

Table 5. Estimated number of small game hunters by species and region in Michigan, 1999-2002.[a]

Species	1999	2000	2001	2002 No.	2002 95% CL	2001-2002 % Change
Pheasants[b]						
UP	1,575	1,521	2,006	1,312	499	-35%
NLP	19,451	24,990	23,279	21,329	1,778	-8%
SLP	51,891	48,096	48,704	43,301	2,447	-11%
Statewide	69,709	70,937	70,051	62,460	2,921	-11%
Northern bobwhite quail						
UP	0	0	0	0	0	
NLP	558	291	1,000	572	287	-43%
SLP	2,720	2,560	2,672	2,105	568	-21%
Statewide	3,069	2,847	3,541	2,551	669	-28%
Ruffed grouse						
UP	54,704	54,140	46,455	42,096	2,013	-9%
NLP	72,428	64,844	61,441	51,962	2,668	-15%
SLP	23,327	16,786	17,252	13,833	1,470	-20%
Statewide	139,807	125,858	116,008	100,298	3,279	-14%
Woodcock						
UP	15,290	14,913	15,379	11,713	1,369	-24%
NLP	33,239	31,214	29,397	25,407	1,958	-14%
SLP	11,505	10,108	10,587	8,401	1,135	-21%
Statewide	55,497	51,499	50,618	41,512	2,492	-18%
Cottontail rabbits						
UP	4,360	5,163	4,878	3,801	823	-22%
NLP	35,522	34,591	36,036	29,976	2,052	-17%
SLP	76,114	73,842	71,978	65,761	2,827	-9%
Statewide	109,856	107,714	106,378	94,977	3,386	-11%
Snowshoe hares						
UP	13,683	12,489	14,202	10,649	1,297	-25%
NLP	16,263	13,897	16,040	11,388	1,376	-29%
SLP	1,571	1,293	1,658	1,411	506	-15%
Statewide	30,600	26,929	30,855	22,915	1,945	-26%
Squirrels						
UP	5,764	5,533	5,261	4,217	851	-20%
NLP	42,971	43,859	45,589	36,549	2,306	-20%
SLP	61,170	58,891	56,705	54,863	2,676	-3%
Statewide	103,059	101,643	100,597	90,074	3,368	-10%

[a]The number of hunters does not add up to the statewide total because hunters can hunt in more than one region.
[b]Included both regular and late seasons.

Table 5 (continued). Estimated number of small game hunters by species and region in Michigan, 1999-2002.[a]

Species	1999	2000	2001	2002 No.	2002 95% CL	2001-2002 % Change
Crows						
UP	1,125	1,612	1,922	1,575	525	-18%
NLP	7,016	5,915	7,880	6,363	1,018	-19%
SLP	12,156	11,595	12,638	9,902	1,217	-22%
Statewide	19,483	18,086	21,641	17,179	1,638	-21%
Ducks (Regular season)						
UP	5,908	6,827	6,293	6,644	711	6%
NLP	20,768	20,009	19,615	19,126	1,051	-2%
SLP	27,360	28,491	31,734	27,152	1,230	-14%
Statewide	48,281	49,452	51,908	47,277	1,492	-9%
Ducks (Late season)[c]						
UP						
NLP		562	875	2,119	411	142%
SLP		7,324	9,150	8,927	812	-2%
Statewide		7,866	10,003	10,916	905	9%
Geese (Early season)						
UP	3,083	2,671	2,177	1,964	402	-10%
NLP	7,523	7,242	7,924	7,756	694	-2%
SLP	21,403	17,785	19,251	17,219	1,059	-11%
Statewide	31,225	26,791	28,352	26,123	1,273	-8%
Geese (Regular season)						
UP	4,024	4,256	3,869	3,381	514	-13%
NLP	10,885	8,594	9,629	8,277	689	-14%
SLP	15,189	12,888	16,673	13,442	989	-19%
Statewide	29,066	24,840	28,907	24,206	1,236	-16%
Geese (Late season)						
UP	0	0	0	0	0	
NLP	935	467	1,041	984	255	-5%
SLP	11,908	8,329	12,283	9,682	826	-21%
Statewide	12,741	8,788	13,190	10,526	866	-20%

[a]The number of hunters does not add up to the statewide total because hunters can hunt in more than one region.
[b]Included both regular and late seasons.
[c]The estimate of hunters participating during the late duck season in the UP was combined with the estimate reported for the regular duck season.

Table 6. Estimated amount of small game hunter effort (days afield) by species and region, 1999-2002.[a]

Species	1999	2000	2001	2002 No.	2002 95% CL	2001-2002 % Change
Pheasants[b]						
UP	6,635	6,577	8,407	4,701	2,294	-44%
NLP	77,421	93,400	88,541	79,316	9,443	-10%
SLP	222,862	182,090	180,933	181,130	14,566	0%
Statewide	306,919	282,067	277,880	265,147	25,429	-5%
Northern bobwhite quail						
UP	0	0	0	0	0	
NLP	1,184	875	3,901	2,187	2,147	-44%
SLP	9,470	9,172	11,811	9,002	3,367	-24%
Statewide	10,654	10,047	15,712	11,189	5,199	-29%
Ruffed grouse						
UP	500,207	475,315	404,393	400,064	29,026	-1%
NLP	429,050	385,363	339,643	348,828	31,355	3%
SLP	128,840	78,334	84,600	75,240	14,230	-11%
Statewide	1,058,097	939,011	828,636	824,131	112,811	-1%
Woodcock						
UP	111,786	106,677	105,801	87,336	14,503	-17%
NLP	197,015	187,535	162,176	158,382	18,424	-2%
SLP	61,791	42,757	55,196	41,632	8,589	-25%
Statewide	370,592	336,969	323,173	287,350	26,163	-11%
Cottontail rabbits						
UP	23,738	32,419	27,305	26,385	9,500	-3%
NLP	278,232	220,751	229,330	201,293	37,368	-12%
SLP	549,488	495,311	478,608	437,672	37,702	-9%
Statewide	851,458	748,481	735,243	665,350	54,574	-10%
Snowshoe hares						
UP	103,750	83,588	99,217	78,592	19,092	-21%
NLP	130,779	92,062	110,851	89,101	33,711	-20%
SLP	9,751	10,241	21,218	5,675	3,309	-73%
Statewide	244,280	185,891	231,286	173,368	38,943	-25%
Squirrels						
UP	45,615	42,973	32,955	39,827	15,033	21%
NLP	295,589	268,069	275,349	225,554	29,652	-18%
SLP	366,869	347,482	350,533	322,951	27,666	-8%
Statewide	708,074	658,524	658,837	588,333	44,625	-11%

[a]The number of hunters does not add up to the statewide total because hunters can hunt in more than one region.
[b]Included both regular and late seasons.

Table 6 (continued). Estimated amount of small game hunter effort (days afield) by species and region, 1999-2002.[a]

Species	1999	2000	2001	2002 No.	2002 95% CL	2001-2002 % Change
Crows						
UP	6,461	9,211	9,189	7,695	3,213	-16%
NLP	51,071	43,228	38,371	29,941	7,018	-22%
SLP	90,872	58,533	72,658	53,665	10,762	-26%
Statewide	148,404	110,972	120,219	91,301	13,557	-24%
Ducks (Regular season)						
UP	31,597	44,561	37,721	38,871	5,562	3%
NLP	130,593	122,269	125,364	119,508	9,428	-5%
SLP	181,691	180,288	211,935	168,292	11,236	-21%
Statewide	343,881	347,118	375,020	326,671	15,817	-13%
Ducks (Late season)[c]						
UP						
NLP		877	1,356	3,397	734	150%
SLP		11,056	14,864	13,397	1,312	-10%
Statewide		11,933	16,220	16,794	1,569	4%
Geese (Early season)						
UP	8,992	9,350	8,513	7,898	2,242	-7%
NLP	31,107	29,181	32,953	31,276	3,597	-5%
SLP	90,509	69,454	79,788	70,166	5,729	-12%
Statewide	130,608	107,986	121,254	109,340	7,095	-10%
Geese (Regular season)						
UP	15,647	18,348	16,520	14,813	3,115	-10%
NLP	42,499	43,587	45,666	40,607	4,674	-11%
SLP	60,184	51,609	62,621	53,929	6,326	-14%
Statewide	118,330	113,544	124,807	109,348	8,447	-12%
Geese (Late season)						
UP	0	0	0	0	0	
NLP	3,940	1,589	3,403	3,276	1,011	-4%
SLP	50,163	32,629	48,923	36,439	4,479	-26%
Statewide	54,103	34,218	52,326	39,715	4,747	-24%

[a]The number of hunters does not add up to the statewide total because hunters can hunt in more than one region.
[b]Included both regular and late seasons.
[c]The estimate of hunting effort during the late duck season in the UP was combined with effort reported for the regular duck season.

Table 7. Estimated small game harvest by species and region in Michigan, 1999-2002.

Species	1999	2000	2001	2002 No.	2002 95% CL	2001-2002 % Change
Pheasants[a]						
UP	4,072	4,256	4,781	1,539	865	-68%
NLP	43,883	46,027	36,400	37,134	6,097	2%
SLP	85,981	83,129	80,502	72,371	8,595	-10%
Statewide	133,936	133,411	121,682	111,043	10,850	-9%
Northern bobwhite quail						
UP	0	0	0	0	0	
NLP	425	221	1,124	538	574	-52%
SLP	2,806	4,993	3,263	2,336	1,343	-28%
Statewide	3,231	5,214	4,387	2,874	1,494	-34%
Ruffed grouse						
UP	374,090	344,301	219,541	171,268	18,404	-22%
NLP	219,978	209,088	136,760	126,797	49,894	-7%
SLP	40,247	27,013	24,555	16,238	3,946	-34%
Statewide	634,316	580,402	380,857	314,303	53,497	-17%
Woodcock						
UP	54,238	40,755	46,658	34,130	7,967	-27%
NLP	91,050	82,638	82,266	76,407	11,732	-7%
SLP	35,182	21,803	25,331	15,845	4,094	-37%
Statewide	180,470	145,196	154,255	126,382	15,550	-18%
Cottontail rabbits						
UP	5,955	10,587	3,954	6,988	3,325	77%
NLP	135,172	130,381	122,253	100,707	16,479	-18%
SLP	425,583	374,710	385,028	362,398	40,656	-6%
Statewide	566,709	515,678	511,235	470,093	44,622	-8%
Snowshoe hares						
UP	88,739	52,251	61,760	31,740	2,938	-49%
NLP	41,015	39,036	46,871	20,349	1,305	-57%
SLP	2,370	6,897	13,717	3,474	7,269	-75%
Statewide	132,125	98,184	122,349	55,563	10,512	-55%
Squirrels						
UP	38,275	48,803	43,019	22,786	7,269	-47%
NLP	280,740	295,368	279,005	205,393	22,384	-26%
SLP	355,342	333,416	322,510	318,984	29,474	-1%
Statewide	674,357	677,586	644,534	547,164	38,683	-15%

[a]Included both regular and late seasons.

Table 7 (continued). Estimated small game harvest by species and region in Michigan, 1999-2002.

Species	1999	2000	2001	2002 No.	2002 95% CL	2001-2002 % Change
Crows						
UP	3,143	9,283	8,824	4,666	701	-47%
NLP	37,102	32,985	31,725	37,841	2,603	19%
SLP	82,743	60,825	75,599	50,235	3,061	-34%
Statewide	122,989	103,093	116,148	92,742	23,913	-20%
Ducks (Regular season)						
UP	35,220	47,325	39,105	61,573	17,847	57%
NLP	172,187	136,118	154,453	149,864	12,798	-3%
SLP	195,883	198,232	226,820	191,924	15,985	-15%
Statewide	403,289	381,676	420,378	403,361	27,423	-4%
Ducks (Late season)[a]						
UP						
NLP		1,140	1,643	5,472	1,940	233%
SLP		17,057	25,969	19,684	2,942	-24%
Statewide		18,197	27,611	25,156	3,632	-9%
Geese (Early season)						
UP	7,901	9,262	5,885	7,942	3,895	35%
NLP	24,152	23,552	24,495	26,366	5,033	8%
SLP	58,475	55,770	69,247	60,208	7,213	-13%
Statewide	90,528	88,584	99,627	94,516	9,595	-5%
Geese (Regular season)						
UP	10,789	13,063	8,053	8,090	2,603	0%
NLP	19,110	18,332	18,055	19,270	3,061	7%
SLP	21,018	23,895	33,278	28,164	4,497	-15%
Statewide	50,916	55,290	59,385	55,524	744	-7%
Geese (Late season)						
UP	0	0	0	0	0	
NLP	3,881	224	1,624	1,945	918	20%
SLP	27,993	18,761	33,359	23,399	5,293	-30%
Statewide	31,874	18,985	34,983	25,344	5,557	-28%

[a]The estimate of harvest during the late duck season in the UP was combined with harvest reported for the regular duck season.

Table 8. Estimated number of hunters, harvest, and hunter effort (days afield) during the experimental September 1-10 Canada goose season in Huron, Saginaw, and Tuscola counties (Michigan), 2000-2002.

	Hunters		Harvest		Days afield	
Year	No.	95% CL	No.	95% CL	No.	95% CL
2000	2,120	347	5,529	1,271	8,059	1,700
2001	2,382	355	5,931	1,175	8,355	1,239
2002	2,576	393	6,274	1,096	8,456	1,358

Table 9. Estimated number and proportion of Michigan migratory bird hunters that registered with the Harvest Information Program during 1997-2002.[a]

Year and hunters	No.	95% CL	%	95% CL
1997				
Waterfowl	41,128	1,589	63%	2%
Woodcock	19,672	1,731	38%	3%
Combined	52,698	2,153	51%	2%
1998				
Waterfowl	48,535	2,151	70%	2%
Woodcock	20,580	1,967	34%	3%
Combined	58,376	2,504	51%	2%
1999				
Waterfowl	58,811	1,900	92%	2%
Woodcock	20,961	1,945	39%	3%
Combined	69,571	2,225	65%	2%
2000				
Waterfowl	56,352	1,390	93%	1%
Woodcock	19,741	1,491	40%	3%
Combined	65,561	1,788	66%	2%
2001				
Waterfowl	40,228	1,464	63%	2%
Woodcock	19,279	1,604	39%	3%
Combined	51,853	1,992	51%	2%
2002				
Waterfowl	46,120	1,480	78%	2%
Woodcock	25,422	1,957	62%	3%
Combined	64,598	2,279	71%	2%

[a]Analyses limited to licensees that hunted.

Table 10. Estimated number of Michigan hunters, animals harvested, and hunting effort (days afield) among people that registered with the Harvest Information Program, 2002.[a]

	Hunters		Harvest		Days afield	
Species	No.	95% CL	No.	95% CL	No.	95% CL
Woodcock	25,967	1,977	90,684	13,303	181,999	20,975
Ducks (Regular season)	37,485	1,412	331,820	26,413	259,984	13,862
Ducks (Late season)	8,846	814	21,138	3,435	13,626	1,422
Geese (Early season)	19,929	1,136	72,969	8,764	83,930	6,385
Geese (Regular season)	18,699	1,104	43,372	5,352	84,049	6,996
Geese (Late season)	8,187	773	18,449	4,310	29,669	3,964

[a]Analyses limited to people that registered with HIP and hunted.

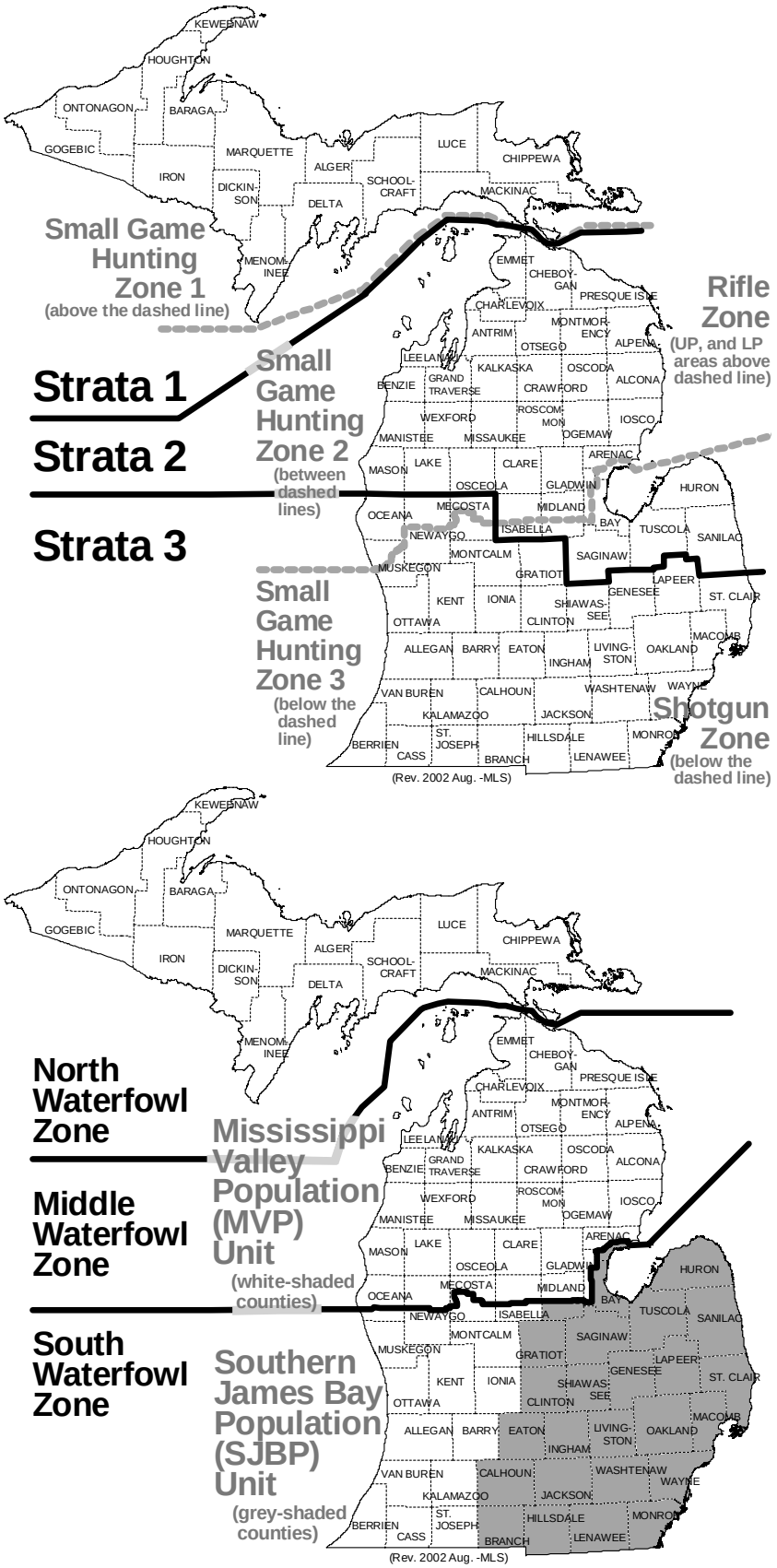

Figure 1. Areas (strata) used to summarize the survey data (top). Stratum boundaries did not entirely match either the small game (top) or the waterfowl (bottom) management hunting zones.

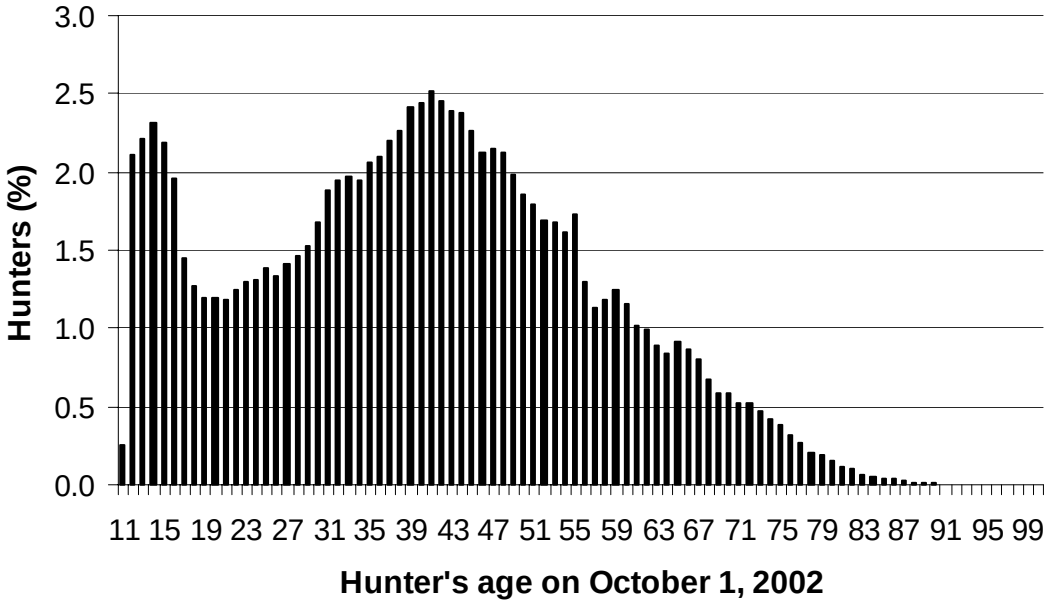

Figure 2. Age of people that purchased a small game hunting license in Michigan for the 2002 hunting seasons ($\bar{X}$ = 40 years).

Figure 3. Estimated number of small game hunters in Michigan, 1954-2002 (estimate of the number of people that went afield). No estimate was available for 1984.

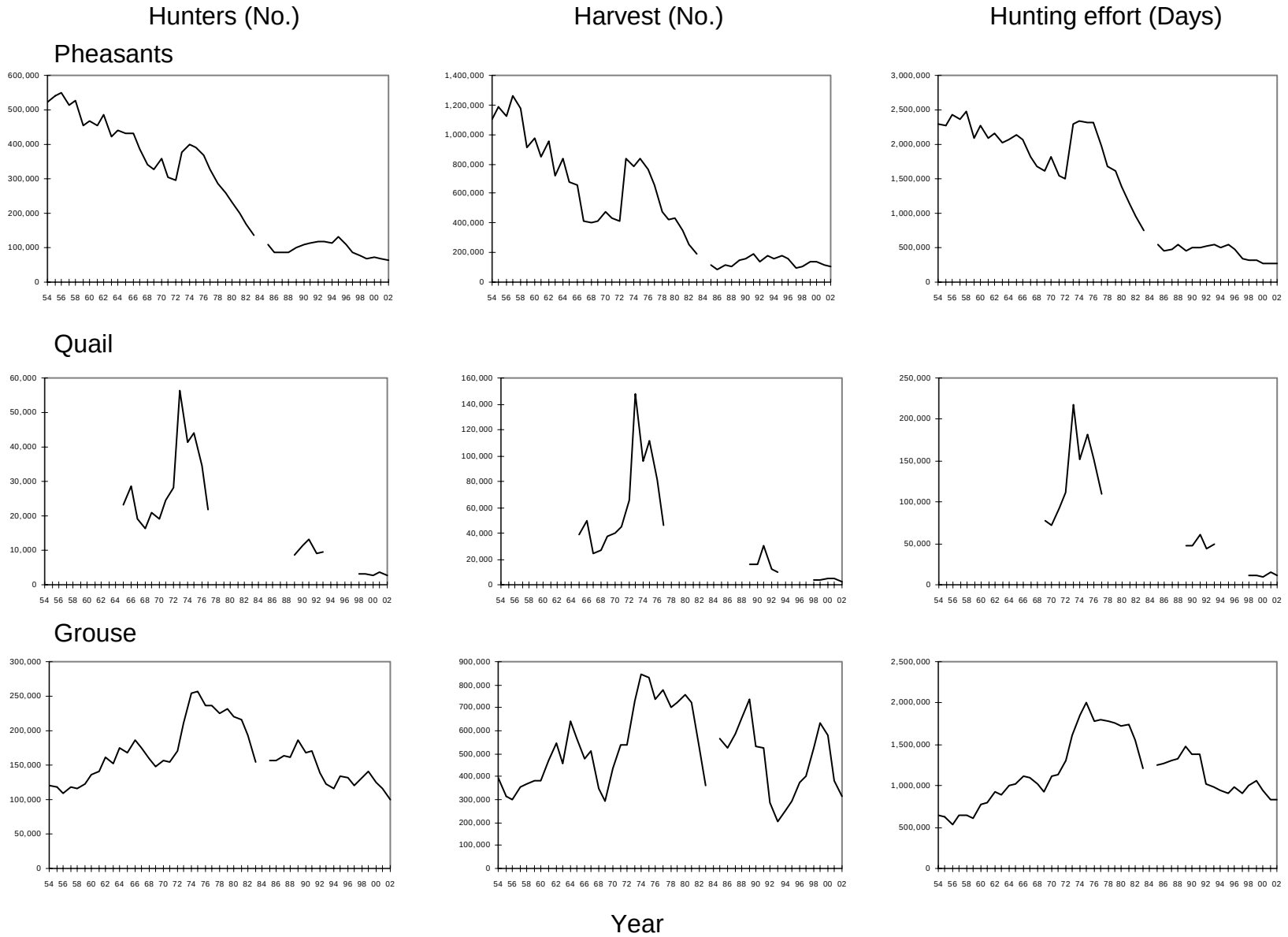

Figure 4. Estimated number of hunters, harvest, and hunting effort in Michigan during the upland game and waterfowl hunting seasons, 1954-2002. No estimates were available or no seasons existed during years when no data are plotted.

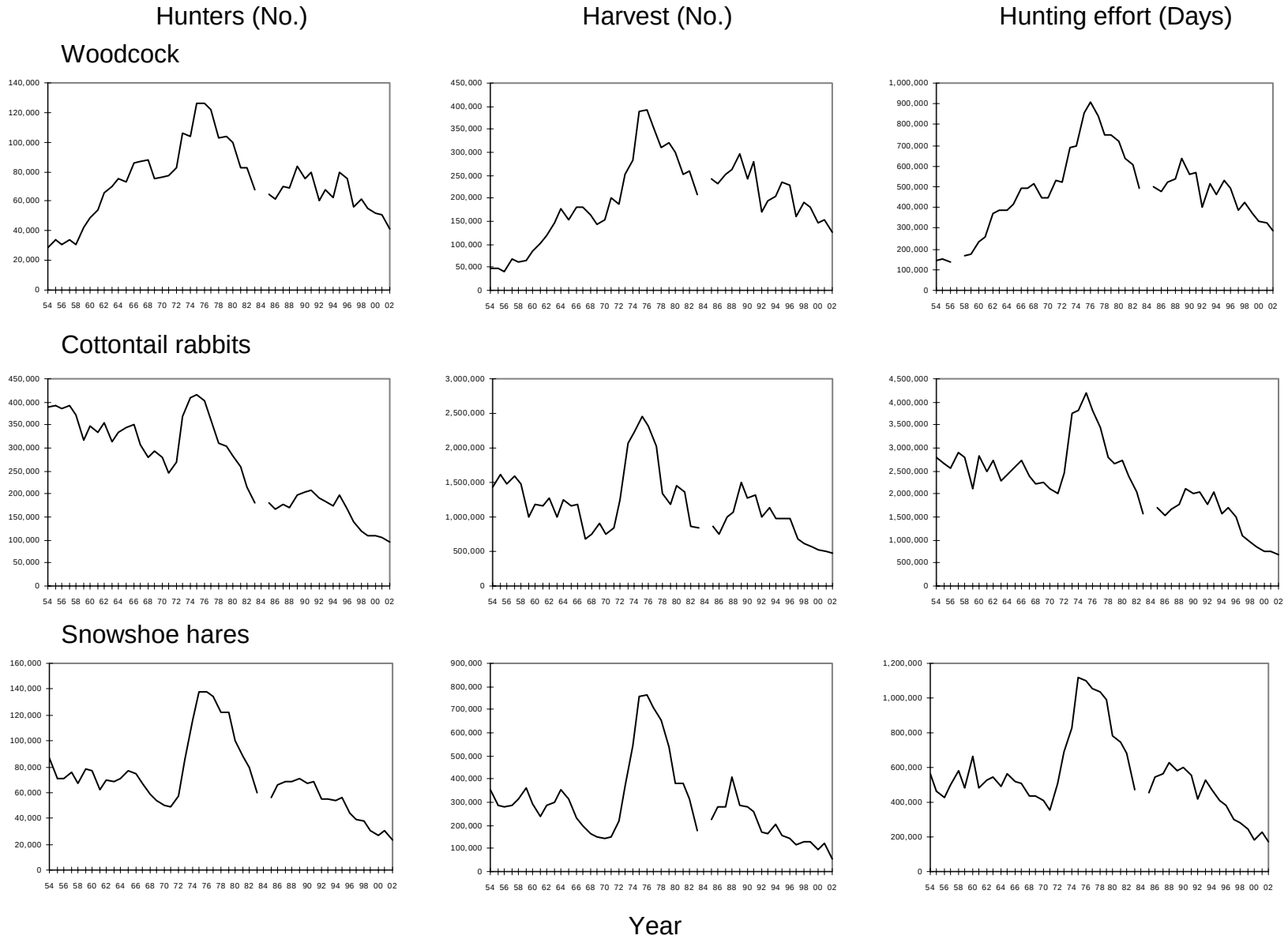

Figure 4 (continued). Estimated number of hunters, harvest, and hunting effort in Michigan during the upland game and waterfowl hunting seasons, 1954-2002. No estimates were available or no seasons existed during years when no data are plotted.

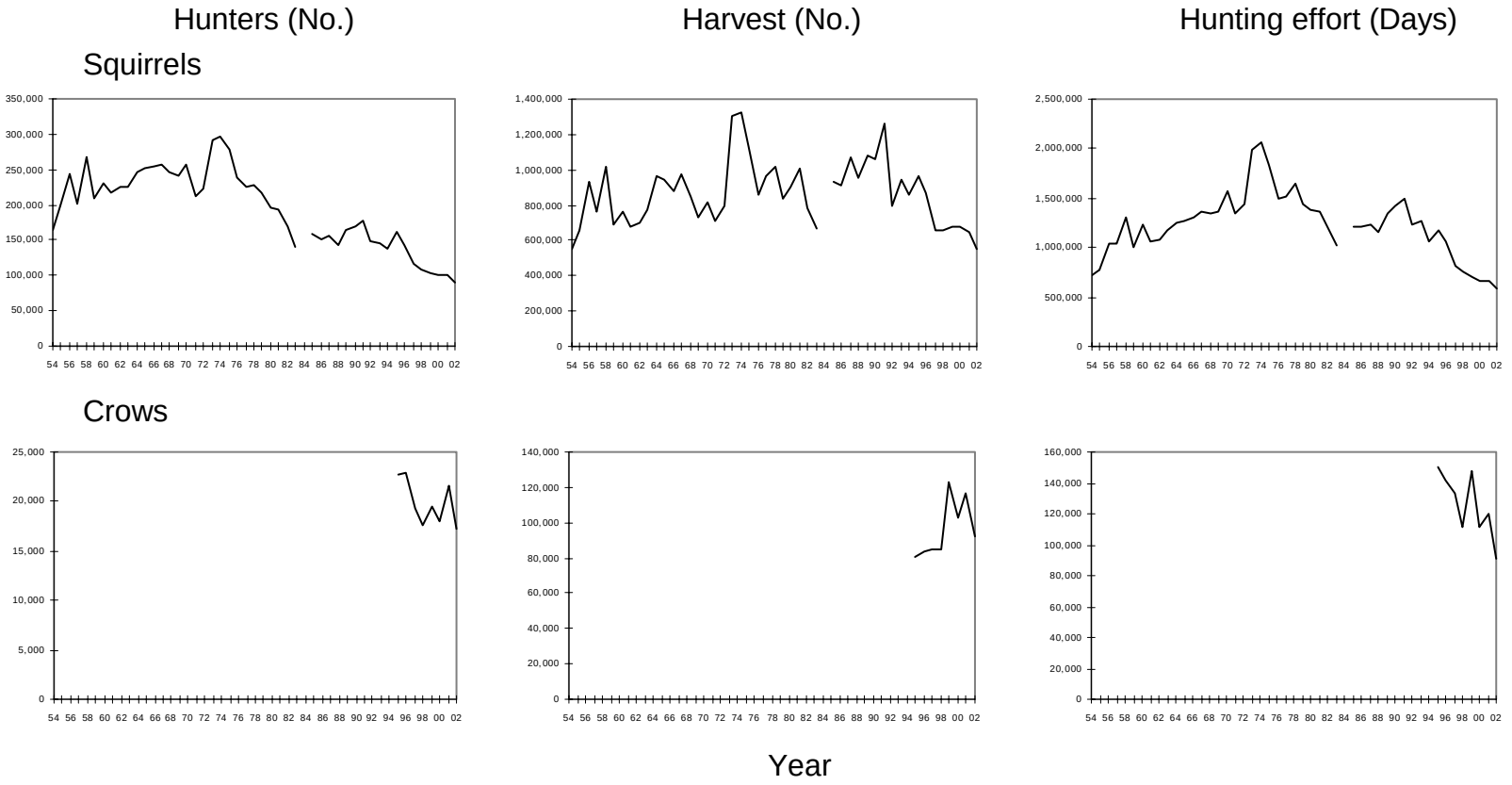

Figure 4. (continued) Estimated number of hunters, harvest, and hunting effort in Michigan during the upland game and waterfowl hunting seasons, 1954-2002. No estimates were available or no seasons existed during years when no data are plotted.

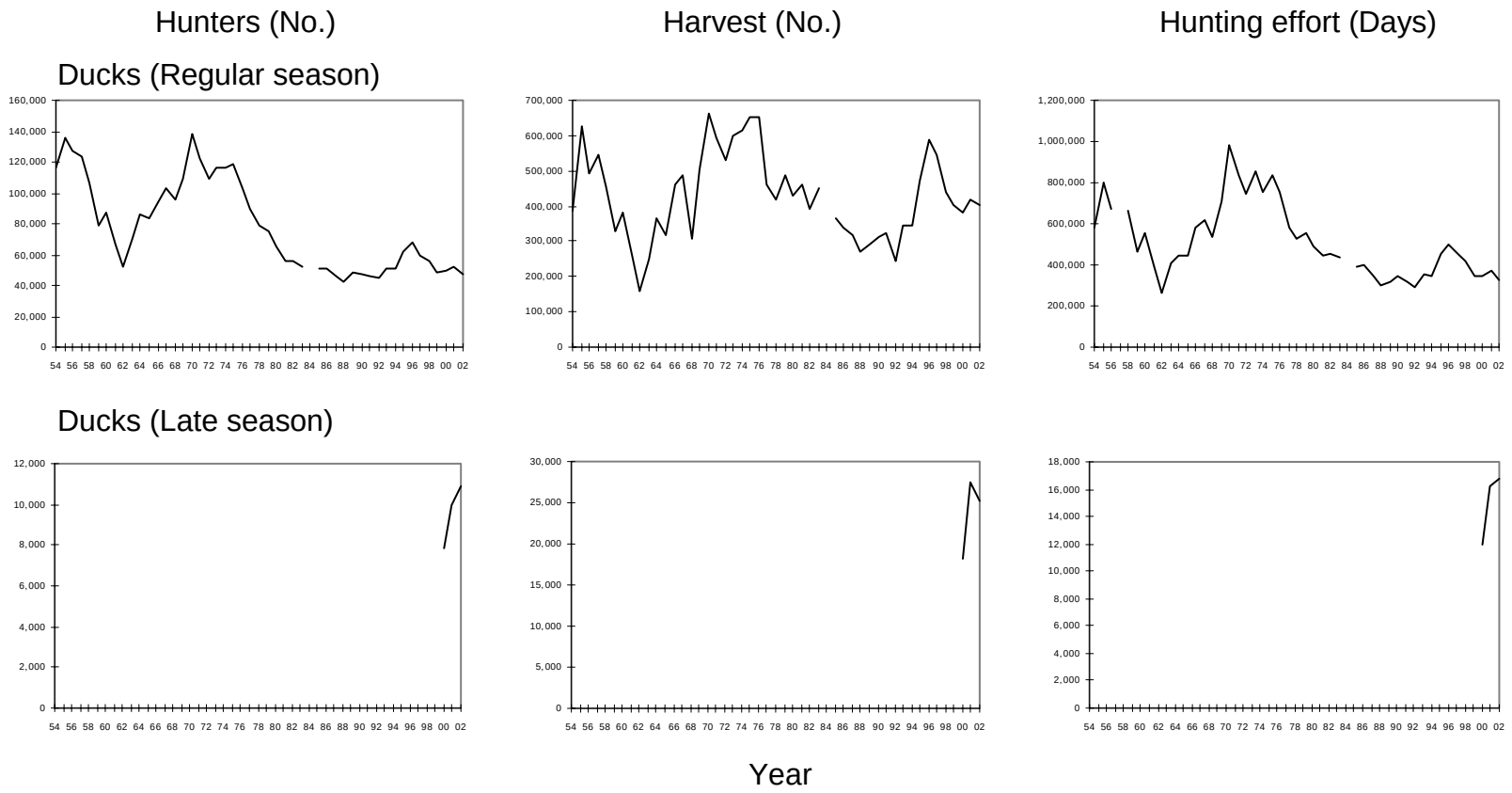

Figure 4 (continued). Estimated number of hunters, harvest, and hunting effort in Michigan during the upland game and waterfowl hunting seasons, 1954-2002. No estimates were available or no seasons existed during years when no data are plotted.

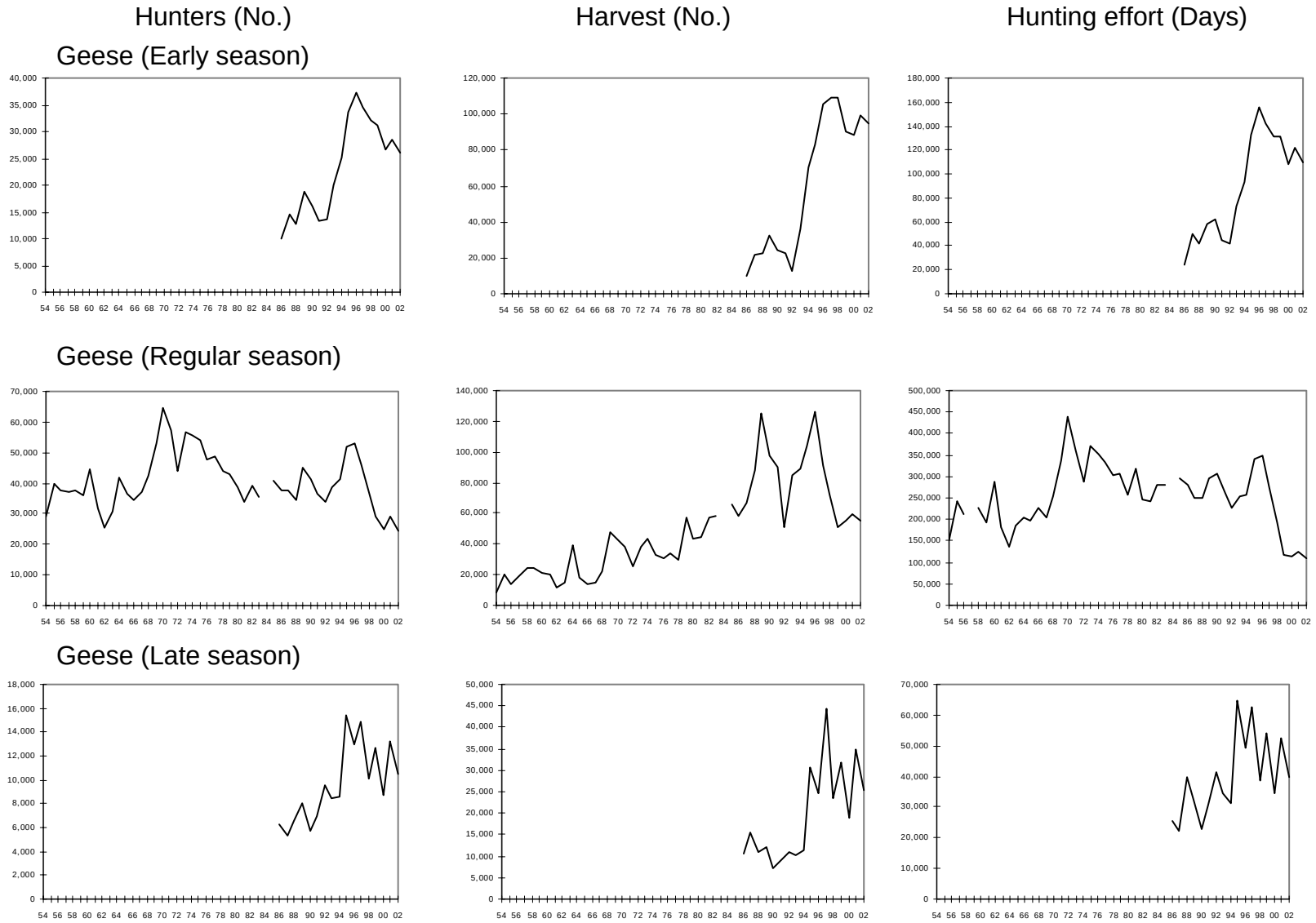

Figure 4 (continued). Estimated number of hunters, harvest, and hunting effort in Michigan during the upland game and waterfowl hunting seasons, 1954-2002. No estimates were available or no seasons existed during years when no data are plotted.

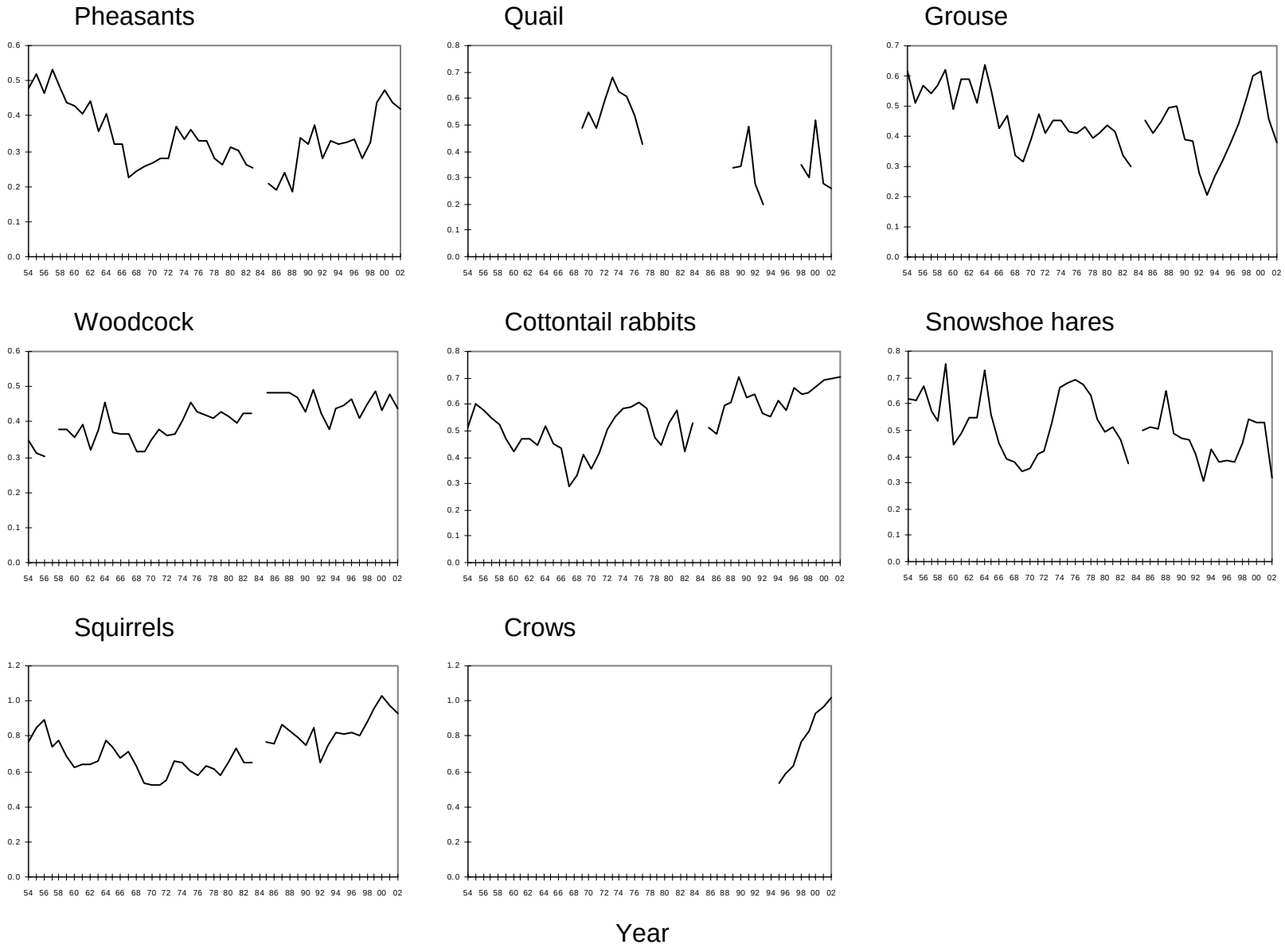

Figure 5. Estimated harvest per effort in Michigan during the upland game and waterfowl hunting seasons, 1954-2002. No estimates were available or no seasons existed during years when no data are plotted.

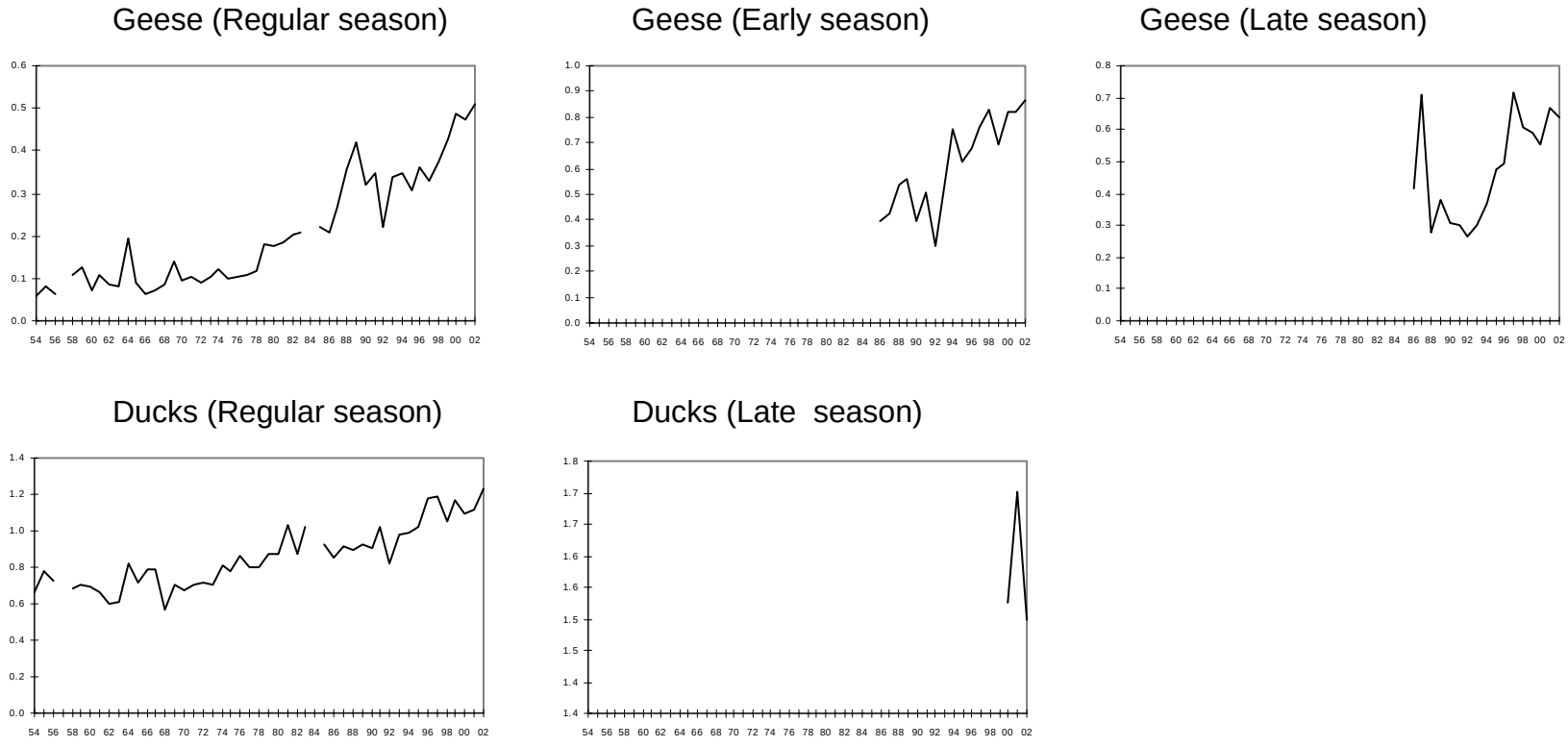

Figure 5 (Continued). Estimated harvest per effort in Michigan during the upland game and waterfowl hunting seasons, 1954-2002. No estimates were available or no seasons existed during years when no data are plotted.